

BROWN & ROOT INC
HOUSTON TEXAS

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February 20, 1943.

Mr. A. E. Kipps
War Production Board, Zinc Branch
Temporary B, Room-1614
Washington, D. C.

40115125



Dear Mr. Kipps:

This is to place in your hands the information you requested in our conversation yesterday pertinent to the submittal of a complete Mining and Milling Project on Zinc Ores in the Webb City, Missouri, Area by Brown & Root, Inc.

The details of the information herewith submitted are contained in the reports of our consultants, Mr. William H. Stewart of the Stewart Engineering Company, Joplin, Missouri and Mr. Henry E. Aspas of the Ore Reclamation Company, Picher, Oklahoma. Time makes it better to supply you with the basic figures and details derived from the above sources and the detailed analysis will be submitted if needed. This project has been submitted to you by the writer who is an Agent for Brown & Root, Inc., of Houston, Texas. The mining leases bear a 2% Royalty to the land owners and have been taken in the name of George R. Brown, an Executive Officer of Brown & Root, Inc. The operating personnel of our proposed organization will be selected from the Brown & Root, Inc. organization supplemented where necessary by the best available talent procurable.

Mr. William Stewart, has supplied me with the following basic figures as follows:

	<u>Total Area</u>	<u>North Area</u>
Developed Ores	19,192,000. Rock Tons	6,873,000. Rock Tons
Probable Ores	6,869,000. Rock Tons	1,392,000. Rock Tons
Possible Ores	10,456,000. Rock Tons	6,456,500. Rock Tons
TOTAL	36,549,000. Rock Tons	14,721,500. Rock Tons

The above estimate of reserves was prepared in collaboration with the Engineers of the U. S. Bureau of Mines. It is my understanding that a copy of the Bureau's report on this area has been tendered your department.

DI C660-6433

To: Mr. A. E. Kipps, W.P.B.-Zinc Br.

From: Brown & Root, Inc.

The above tonnage is estimated to have an analysis of 2.55% ZnS and .35 Pbs or a combined mineral assay of 2.91%. This, we consider, is a very conservative figure to use in our calculations.

Producing at a rate of 4,800 Rock tons per day, we arrive at a total Mining, Milling and Overhead cost of \$2.14 per ton of rock and this involves a total organization of 486 people. This provides a production of 1,684,800 Rock tons annually which calculates a production of 10.92 Rock tons per manshift.

Assuming the production of 3,000 Rock tons per day the total rock ton cost has been estimated to be \$2.19 and this employs 352 people, which in turn gives a production of 1,040,000 Rock tons annually, and a calculated production of 9.2 Rock tons per manshift.

Our consultant, Mr. Henry E. Aspens, has prepared estimates from which we assume an 85% overall mill efficiency which will show 2.45% recovery of 60% Zinc and .55% recovery of 75% Lead. This then gives an annual concentrate production of 41,278 tons of Zinc Concentrates assaying 60% Zinc and 5,897 tons of Lead Concentrates assaying 75% Lead, based on 4,800 tons per day mill input. Assuming 3,000 tons per day mill input with the same efficiency and recovery we will produce 25,580 tons of Zinc Concentrates with an assay of 60% Zinc and 3,640 tons of Lead Concentrates assaying 75% Lead.

Assuming a 90% smelting efficiency factor, the amount of Zinc metal from the Concentrates we produce would be 22,290 tons annually from a 4,800 ton daily capacity plant. The Concentrate Value based on Joplin Market Settlements will be \$3,507,704.44 for the Zinc Concentrates and \$430,395.85 for the Lead Concentrates for this same 4,800 ton plant operation. Above figures based on a Zero quota.

For the 3,000 ton per day plant we estimate there will be produced annually 13,780 tons of Zinc metal. The Concentrate Value based on Joplin Market Settlements will be \$2,165,290.40 for the Zinc Concentrates and \$419,983.20 for the Lead Concentrates. Above figures based on Zero quota.

The Equipment requirements of the Mine, Surface and Mill Construction, Roads, Ponds, Transmission Lines, Installations, Engineering and Supervision; the total cost of the respective Projects are \$1,402,000 for the 4,800 ton per day plant and \$1,127,000 for the 3,000 ton per day plant.

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To: A. E. Kipps, W.P.B. - Zinc Br.

From: Brown & Root, Inc.

With the above respective cost data available, it is my intention, to leave the estimation of amortization cost per ton of Crude Ore to the principals involved in the final financial negotiations.

With very thorough care we have checked every available source for deliveries of critical materials and also the local labor situation; and conclude that it will require six months from date of approval of this Project to get into production.

We do not have a complete list of available used critical material from which to make selections. It is our determined plan to use as much used material as will fit the requirements. Until a decision is reached, as to which project is acceptable, it would be difficult to detail the requirements. Your source of information will, I am sure, bear out our findings that there is sufficient labor and housing facilities to satisfy our Project.

Should the data submitted be inadequate for your requirements, we will be glad to amplify same.

In brief our studies conclude that the selection of the 4,800 ton per day Plant has advantages over the 5,000 ton per day Plant here summarized:

	<u>5,000 Ton Per Day</u>	<u>4,800 Ton Per Day</u>
1. Tons Per Manshift (for entire operation)	9.2	10.92
2. Total Cost Per Ton per Day	$\frac{\$1,237,000}{5000} = \247.40	$\frac{\$1,402,000}{4800} = \292.08
3. Connected H.P. Per Ton per Day	1.42	1.15
4. Total Men Employed in Concentrator	64	51
5. Cost Per Ton Per 24 Hours for Concentrator	\$144.80	\$104.50
6. K.W. Per Ton Per Hour for Concentrator	9.15	6.95

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To: A. E. Kipps, W.D.B.-Zinc Br.

From : Brown & Root, Inc.

The final pertinent factor is that the total amount of critical material used in the construction and equipping of the 4,800 Ton per Day Plant will not exceed the amount required for the 3,000 Ton per Day Plant. Therefore, the amount of critical material per ton of rock or metal produced will be less in the case of the 4,800 Ton per Day Plant.

For your information, my Staff will be available Sunday, February 21. You may reach us by telephone, Adams 5052 or Michigan 5161. Mr. Aspoas can be located at the Mayflower Hotel, Room 539-A.

Respectfully submitted,

BROWN & ROOT, INC.

By:

Elmer Cashion, Agent.

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